

PLATE I.—KAMES OF SPANGLER HILL, 5 MILES SOUTH OF COLUMBUS.  
Irregular hills of drift.



PLATE II.—SMALL GLACIAL-LAKE BED ON HARTMAN FARM, 5 MILES SOUTH OF COLUMBUS.  
Looking southeast toward morainal hills in the distance.

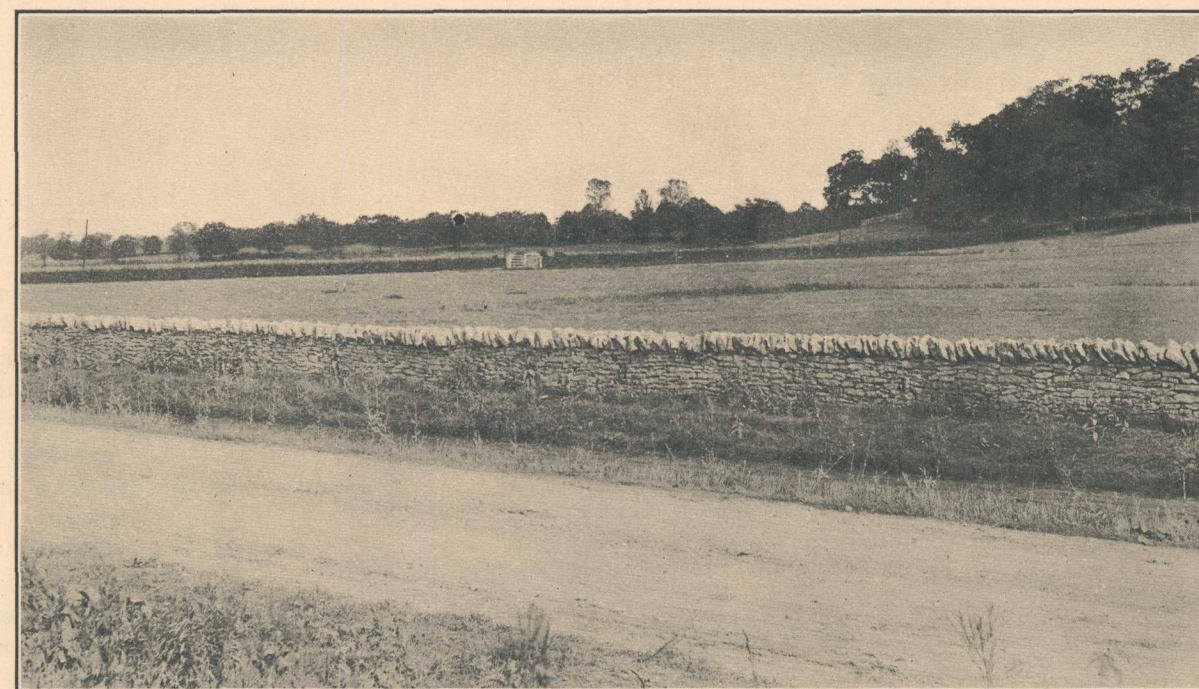


PLATE III.—LEVEL SURFACE OF ROCK TERRACE OF SCIOTO RIVER AT MARBLE CLIFF.  
Terrace was cut on Delaware limestone, fragments of which were used in building the stone fence in the foreground.



PLATE IV.—QUARRY FACE OF COLUMBUS LIMESTONE, NEAR MARBLE CLIFF.  
Showing thicker-bedded quarry rock at the base.



PLATE V.—BEREA SANDSTONE RESTING UNCONFORMABLY ON BEDFORD SHALE, NEAR LITHOPOLIS.  
The hard ledge above the man's head shows the full thickness of Berea sandstone present at this place. The nature of the unconformity and the variable thickness of the sandstone are clearly shown. (Photograph by H. A. Gleason.)



PLATE VI.—LARGE SPHEROIDAL "IRONSTONE" CONCRETIONS, CHARACTERISTIC OF THE LOWER PART OF THE OHIO SHALE, AT "THE NARROWS," NORTH OF WORTHINGTON.

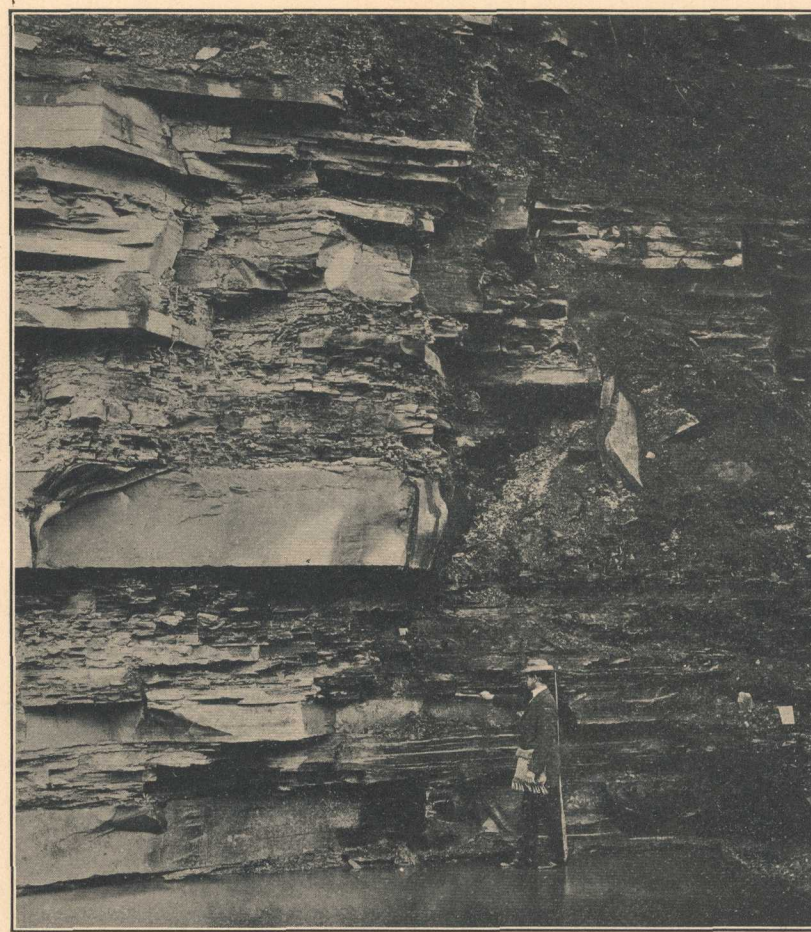


PLATE VII.—QUARRY FACE OF LOWER PART OF CUYAHOGA FORMATION AT LITHOPOLIS.  
Showing thick beds of homogeneous fine-grained sandstone suitable for building.



PLATE VIII.—FLOWING ARTESIAN WELL NEAR HARRISBURG.  
Water obtained from Silurian limestone about 400 feet below surface.



## LIST OF FOSSILS SHOWN ON ILLUSTRATION SHEET II.

Illustration Sheet II shows some of the fossils commonly found in the formations that outcrop in the Columbus quadrangle. The illustrations are taken from figures in other reports, chiefly those of State geological surveys, and are natural size except those otherwise marked.

### FOSSILS FROM THE MONROE FORMATION (SILURIAN).

1. *Schuchertella hydraulica* (Whitfield). Enlarged 2½ diameters. Not positively known in central Ohio.
- 2, 3. *Spirifer ohioensis* Grabau. A rather rare fossil in this quadrangle.
4. *Greenfieldia whitfieldi* Grabau. Not positively known in central Ohio.
5. *Goniophora dubia* Hall. Not positively known in central Ohio.
6. *Leperditia altoides* Grabau. Enlarged about 2½ diameters. A very common fossil at certain horizons in the formation.

### FOSSILS FROM THE COLUMBUS LIMESTONE (DEVONIAN).

7. *Favosites turbinatus* Billings. This compound coral is common in almost every section. Some of the larger specimens attain a diameter of 6 inches.
8. *Syringopora tabulata* Edwards and Haime. A large mass of closely set, straight corallites, having a convex upper surface; a common fossil.
9. *Cladopora robusta* Rominger. A rather common coral colony, which assumes the digitate form.
10. *Heliophyllum corniculum* (Lesueur). One of the most common cup corals of the upper portion of the formation. Most of the specimens are a little smaller than the illustration.
11. *Zaphrentis prolifica* Billings. A common coral.
12. *Zaphrentis gigantea* Lesueur. The largest of the cup corals and a characteristic fossil wherever the formation occurs.
- 13, 14. *Schizophoria propinqua* Hall. Common throughout the formation.
- 15, 16. *Chonetes mucronatus* Hall. Common in the Columbus limestone and also occurs in the Delaware.
- 17, 18. *Productella spinulicosta* Hall. Common in the Columbus limestone and also occurs in the Delaware.
19. *Pholidostrophia iowensis* (Owen). Common in the Columbus limestone and also in the Delaware.
- 20, 21. *Stropheodonta perplana* (Conrad). Common in the Columbus limestone and also occurs in the Delaware.
22. *Stropheodonta hemispherica* Hall. Common in the Columbus limestone and occasionally found in the Delaware.

23. *Meristella nasuta* (Conrad). A very characteristic fossil of the middle portion of the formation.
24. *Atrypa reticularis* (Linné). A common fossil of this and many other formations.
25. *Reticularia fimbriata* (Conrad). Not an abundant fossil, but many specimens are well preserved.
- 26, 27. *Spirifer gregarius* Clapp. A very characteristic fossil that occurs in greatest abundance a little above the middle of the formation.
- 28, 29. *Spirifer acuminatus* (Conrad). A very characteristic fossil of the upper portion of the formation.
- 30, 31. *Spirifer duodenarius* (Hall). Characteristic of the upper portion of the formation.
32. *Aviculipecten cleon* Hall. A rather rare fossil.
33. *Paraclypeus elliptica* Hall. Occurs in both the Columbus and the Delaware limestones.
34. *Modiomorpha concentrica* (Conrad). A rather common fossil.
35. *Conocardium cuneus* (Conrad). A common fossil in the Columbus limestone but rare in the Delaware.
36. *Pleuronotus deceui* (Billings). A common fossil of the Columbus limestone and occasionally found in the Delaware.
37. *Platyceras dumosum* Conrad. Characteristic of the upper 10 feet of the formation.
38. *Callonema bellatulum* (Hall). Abundant in the cherty layers of the middle portion of the formation.
39. *Loxonema pexatum* Hall. Common in the middle and upper portions of the formation.
- 40, 41. *Bellerophon pelops* Hall. Common throughout the formation.
42. *Coleolus crenaticinctus* Hall. A rather rare fossil.
43. *Spiroceras thoas* (Hall). Not very abundant but very characteristic.
44. *Ryticeras columbiense* (Whitfield). Characteristic above the middle of the formation.
- 45, 46. *Phacops cristata* (Hall). Abundant in this formation.
47. *Chasmops calypso* Hall. Not abundant but characteristic.
48. *Proetus rowi* (Green). Abundant in this formation.
- 49, 50. *Coronura diurus* (Green). Rather common and very characteristic.

### FOSSILS FROM THE DELAWARE LIMESTONE (DEVONIAN).

51. *Lingula ligea* Hall. Abundant in a zone near the middle of the formation.
52. *Lingula manni* Hall. Common in the 6 feet of brown shale forming the base of this limestone.
- 53, 54. *Orbiculoidea lodiensis* (Vanuxem). Commonly associated with *Lingula manni*.

- 55, 56. *Leiorhynchus limitare* (Vanuxem). A characteristic fossil of the Marcellus shale and common in the basal brown shale of the Delaware.
57. *Rhipidomella vanuxemi* Hall. A common fossil of the Delaware limestone and also occurs in the Columbus.
- 58, 59. *Chonetes deflectus* Hall. Common throughout the formation.
60. *Leptæna rhomboidalis* (Wilckens). Common throughout this formation and many others.
61. *Stropheodonta demissa* (Conrad). Common in this formation and also in the Columbus limestone.
- 62, 63. *Delthyris consobrina* (D'Orbigny). A common and very characteristic fossil.
- 64, 65. *Cyrtina hamiltonensis* Hall. A common fossil of the Delaware limestone and also occurs in the Columbus.
- 66, 67. *Martinia maia* (Billings). Abundant and very characteristic.
68. *Grammysia bisulcata* (Conrad). Characteristic of certain layers just below the middle of the formation.
69. *Pterinea flabellum* (Conrad). Found in both the Delaware and the Columbus limestones.
- 70, 71. *Platyceras erectum* Hall. A rather common fossil.
- 72, 73. *Tentaculites scalariformis* Hall. Common but not very characteristic.
74. *Phacops vana* (Green). A rather common fossil.

### FOSSILS FROM THE BEDFORD SHALE (CARBONIFEROUS).

- 75, 76. *Paleoneilo bedfordensis* Meek. One of the most characteristic fossils of the formation, abundant at the base.

### FOSSILS FROM THE SUNBURY SHALE (CARBONIFEROUS).

77. *Lingula melie* Hall. A common and characteristic fossil of the base of this formation.
- 78, 79. *Orbiculoidea herzeri* Hall and Clarke. An abundant fossil associated with *Lingula melie*.

### FOSSILS FROM THE BLACK HAND FORMATION (CARBONIFEROUS).

These fossils are among the common forms in the Black Hand formation at Newark, east of the quadrangle, and are probably to be found in the same formation in the Columbus quadrangle.

80. *Allorisma winchelli* Meek.
81. *Allorisma convexum* Herrick.
82. *Sanguinolites naiadiformis* Winchell.
83. *Leiopteria ortonii* Herrick. Enlarged about 4 diameters.
84. *Crenipecten winchelli* (Meek).



